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CLAIMS

1. A solid oxide fuel cell comprising:

an anode, a cathode and a first solid oxide held between the anode and the cathode;

wherein the anode includes metal particles, an anode catalyst and ion conducting bodies; and

wherein the anode catalyst is attached to the surface of the metal particles.

2. The solid electrolyte fuel cell according to claim 1,

wherein the composition of the metal particles and the composition of the anode catalyst differs.

3. The solid oxide fuel cell according to claim 1,

wherein the anode catalyst includes at least one element selected from Pt, Ir, Rh, Pd, Ag and Au.

4. The solid oxide fuel cell according to claim 1,

wherein the anode catalyst includes at least one alloy selected from PtRu, PtSn, PtRe, PtOs, PtW, IrRu, IrSn and IrW.

5. The solid oxide fuel cell according to claim 1,

wherein the average particle diameter of the anode catalyst is in a range of 2 nm to 400 nm.

6. The solid oxide fuel cell according to claim 1,

wherein the metal particles include at least one element selected from Ni, Co and Fe.

7. The solid oxide fuel cell according to claim 1,

wherein the average particle diameter of the metal particles is larger than the average particle diameter of the anode catalyst.

8. The solid oxide fuel cell according to claim 1,

wherein the ion conducting bodies are a second solid oxide.

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9. The solid oxide fuel cell according to claim 8,
wherein the second solid oxide includes Ce.

10. The solid oxide fuel cell according to claim 9,
wherein the second solid oxide has a composition expressed by the formula $Ce_{1-x}M_xO_{2-\alpha}$,
where, M is at least one element selected from Gd, La and Sm, and x and α are values satisfying the following relationships: $0 < x < 1$ and $0 \leq \alpha < 2$.

11. The solid oxide fuel cell according to claim 9,
wherein the second solid oxide has a composition expressed by the formula $Ba(Zr_{1-x'}Ce_{x'})_{1-y'}Gd_{y'}O_{3-\alpha}$,
where, x', y' and α are values satisfying the following relationships: $0 < x' < 1$, $0 < y' < 1$ and $0 \leq \alpha < 3$.

12. The solid oxide fuel cell according to claim 8,
wherein the second solid oxide has a composition expressed by the formula $La_{x''}Sr_{1-x''}Ga_{y''}Mg_{1-y''-z}Co_zO_{3-\alpha}$,
where, x", y", z and α are values satisfying the following relationships: $0 < x'' < 1$, $0 < y'' < 1$, $0 < z < 1$ and $0 < \alpha < 3$.

13. The solid oxide fuel cell according to claim 8,
wherein the composition of the first solid oxide and the composition of the second solid oxide differ from one another.

14. A solid oxide fuel cell comprising:
an anode, a cathode and a first solid oxide held between the anode and the cathode;
wherein the anode includes ion conducting bodies and a plurality of types of metal particles, whose range of particle diameter distribution differs from one another;
wherein at least one type of metal particles, selected from the plurality of types of the metal particles, is attached to the surface of other metal particles; and
wherein the at least one type of metal particles attached to the surface is an anode catalyst.

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15. The solid oxide fuel cell according to claim 14,

wherein the average particle diameter of the at least one type of metal particles, of the plurality of types of the metal particles, is smaller than the average particle diameter of other metal particles.

16. The solid oxide fuel cell according to claim 14,

wherein the average particle diameter of the at least one type of metal particles is in a range of 2 nm to 400 nm.

17. A method for manufacturing a solid oxide fuel cell comprising an anode containing an anode catalyst, a cathode, and a first solid oxide held between the anode and the cathode, the method comprising:

(i) a step of forming metal particles to which an element is attached, by adding the metal particles to a first solution that contains a compound of the element that becomes the anode catalyst, and then reducing the compound to deposit the element on the surface of the metal particles;

(ii) a step of forming a thin membrane that contains the metal particles and ion conducting bodies; and

(iii) a step of forming the anode containing the anode catalyst from the thin membrane, by disposing the thin membrane, the cathode, and the first solid oxide such that the first solid oxide is held between the thin membrane and the cathode, to form a laminated body, and heating the laminated body thus formed.

18. The method for manufacturing a solid oxide fuel cell according to claim 17,

wherein the ion conducting bodies are a second solid oxide.

19. The method for manufacturing a solid oxide fuel cell according to claim 17,

wherein the compound of the element that becomes the anode catalyst is at least one selected from chloroplatinic acid, ruthenium chloride, tin acetate, tungstic acid, sodium hexachloroiridate, rhodium chloride, palladium nitrate, silver acetate and chloroauric acid.

20. The method for manufacturing a solid oxide fuel cell according to